日本産フラグミディユーム屬に就きて

笠　井　幹　夫

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CONTRIBUTIONS TO THE MYCOLOGICAL FLORA OF JAPAN. III. (1)

ON THE JAPANESE SPECIES OF PHRAGMIDIUM.

By

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(With Plate I.)

INTRODUCTION.

The observation which I propose to report upon in the following pages was undertaken with a view to revising the species of *Phragmidium* existing in our country, and, if possible, to correctly describing a few of them in a manner that can readily be of service to those who are interested in the subject.

Since DIETEL (8.9) recorded forty-six species of *Phragmidium* in his monographic paper in 1905, eight more species have been described; namely, *Ph. Rubi-Thunbergii* Kusano, *Ph. orientale* Sydow, *Ph. Butleri* Sydow, *Ph. Nambuanum* Diet., *Ph. Rosae-acicularis* Liro, *Ph. Rubi* var. *candicantium* Vleugel, *Ph. Rubi-saxatilis* Liro, and *Ph. Englerianum* Diet. Consequently about fifty four species have hitherto been known to the scientific world. Of these fifty four species, only ten have been supposed to belong to our flora.

In the present paper I have been able to increase the number of our species of *Phragmidium* to seventeen. Eleven of these are peculiar to Japan and three are new to science.

(1). Prepared under the direction of Prof. Dr. K. MIYABE. Contributions. I.-T. MIYAKE. On Puccinia Parasitic on the Umbelliferae of Japan. Journ. of the Sapporo Agric. Coll. Vol. II. Pt. 3. 1906. Contributions. II. S. ITO, On the Uredineae Parasitic on the Japanese Gramineae. Journ. of the Coll. of Agric., Tohoku Imp. Univ., Vol. 3, No. 2, 1909.

Ph. subcorticium (Schrank) Wint. and *Ph. Fragariastri* (DC.) Schroet., which were ascribed by DIETEL (11) and P. HENNINGS (14) to our flora, have not been found by us, notwithstanding careful search being made for them.

On *Rosa rugosa* Thunb. two forms of *Phragmidium* are commonly found in the vicinity of Sapporo. They have not been distinguished from each other, but have been identified collectively by most of our mycologists to *Ph. subcorticium* (Schrank) Wint. But a careful observation has disclosed the fact, that the so-called "*Ph. subcorticium*" is in reality composed of two distinct species with a clear line of demarcation between them. I am inclined to consider them as new species and propose to give them the names of *Ph. Rosae-rugosae* and *Ph. yezoense*.

The following seventeen species are found in our country:

On *Potentilla*.

1. *Ph. Potentillae* (Pers.) Karst.

On *Rosa*.

2. *Ph. americanum* (Pk.) Diet.
3. *Ph. fusiforme* Schroet.
4. *Ph. japonicum* Diet.
5. *Ph. Rosae-multiflorae* Diet.
6. *Ph. Rosae-rugosae* n. sp.
7. *Ph. yezoense* n. sp.

On *Rubus*.

8. *Ph. Barnardi* Plowr. et Wint. var. *pauciloculare* Diet.
9. *Ph. griseum* Diet.
10. *Ph. heterosporum* Diet.
11. *Ph. Nambuanum* Diet.
12. *Ph. Rubi* (Pers.) Wint.
13. *Ph. Rubi-Idaei* (Pers.) Wint.
14. *Ph. Rubi-japonici* n. sp.
15. *Ph. Rubi-Thunbergii* Kusano.
16. *Ph. Yoshinagai* Diet.

On *Sanguisorba*.

17. *Ph. carbonarium* (Schlecht.) Wint.

The materials, on which my present study was based, were mostly those preserved in the Herbarium of our College, which had been most kindly placed at my disposal by Professor Dr. K. MIYABE. Prof. M. SHIRAI, Prof. S. KUSANO and

Mr. T. YOSHINAGA also kindly supplied me on request with valuable specimens. And I have been able through the kindness of Mr. T. MIYAKE to examine a few Saghalien specimens. Thus the total number of the specimens at my disposal amounted to 205.

Now I wish here to express my hearty thanks to Prof. Dr. K. MIYABE who has helped and encouraged me throughout my work with many valuable suggestions and constant guidance and allowed me also the privilege of a free use of his library and collections. My obligation is also due to Prof SHIRAI, to Drs. Y. TAKAHASHI, S. KUSANO, T. MIYAKE, and S. ITO and to Mr. T. YOSHINAGA, who all had the goodness to aid me in many ways in the preparation of this paper.

SPECIAL PARTS.

On **POTENTILLA.**

1. **Phragmidium Potentillæ** (Pers.) Karst., Fung. Fenn., 1868, No. 94; Sacc., Syll., VII. p.743; Wint., Die Pilze, p.229; Schroet., Pilz Schles., p.352; Fischer, Die Ured. d. Schweiz, p.410; Plowr., British Ured. and Ustilag., p.221; McAlp., The Rusts of Australia, p.188; Diet. Engl. bot. Jahrb., Bd. 37, 1905, p.104; Diet., Ann. Mycol, Vol.6, 1908, p 227; P. Henn., Engl. bot. Jahrb, Bd.32, 1903, p 36.

   Icon: Fischer, Die Ured. d. Schweiz, p.410, fig. 286; Ludwig, F., Lehrbuch d. Nied. Kryptogamen, p 475, fig. 12.

Hosts and distribution.

On *Potentilla chinensis* Ser.

Prov. Ise, Akogigaura (II. T. YOSHINAGA, Aug. 1904)

Prov. Rikuchu, Ishinomaki (II. N. HIRATSUKA, Sept. 1901)

On *Potentilla cryptotaeniae* Maxim.

Prov. Oshima, Konuma (II, III. K. MIYABE, Sept. 28, 1899)

Prov. Iburi, Chitose (II. K. MIYABE et S. ARIMOTO, Aug. 4, 1902)

Prov. Iburi, Hayakita (II. K. MIYABE et S. ARIMOTO, Aug 4, 1902)

On *Potentilla Dickensii* Fr. et Sav.

Prov. Mutsu, Iwakiyama (III. K. KIKUCHI, Aug. 24, 1896)

Prov. Mutsu, Iwakiyama (III. N. HIRATSUKA, Sept. 1899)

On *Potentilla gelida* C. A. Mey.

Prov. Iburi, Matkarinupri (II, III. S. ITO, Aug. 1907)

On *Potentilla Kleiniana* W. et A.

Prov. Tosa, Kamoda-mura (H. T. YOSHINAGA, May. 1903)
„ „ Asakura-mura (III. „ Nov. 1907)
Prov. Iyo, Ebara-mura (H. M. OKUDAIRA, May 22, 1899)

REMARKS:— This is the only species in our country found parasitic on several species of *Potentilla*. I rather hesitate to believe, as will be referred to in the conclusion, the existence of *Ph. Fragariastri* (DC.) Schroet. in Japan, although P. HENNINGS (14.) recorded its occurrence.

On ROSA.

2. **Phragmidium americanum** (Pk.) Diet., Hedwigia, Bd. 44, 1905, p.124.

Icon: Diet., Hedwigia, Bd 44, 1905, pl. IV. fig. 5.

Teleutosori hypophyllous, small, loose, scattered or aggregated, black; teleutospores fusiform or cylindrical, cells 8-10, rarely 7 and 11, septa comparatively thin, base attenuated, apex with a sharp or blunt yellowish papillum (12 mmm. long), membrane dark-brown, thick, provided with many rather small colorless warts, not constricted at septum, the uppermost cell is often longer than the rest, germpores 3 in each cell, 80-100 × 28-32 mmm., pedicel pale-yellow in the upper part, firm, bulbous, longer than the spore length, up to 140 mmm.

Host and distribution.

On *Rosa dahurica* Pall.

Prov. Nemuro, Shumbetsu (III. K. MIYABE, Aug. 6, 1894)
Saghalien, Sausuchainoskoe (III. T. MIYAKE, Oct. 8, 1907)

REMARKS:— Our plant corresponds exactly in every respect to the specimens of *Ph. americanum* (Pk.) Diet. and there remains but little doubt as to their identity. The present species is more or less closely related to *Ph. yezoense*, n. sp, *Ph. fusiforme* Schroet. and *Ph. Rosae-multiflorae* Diet. But from *Ph. yezoense* n. sp. it differs in form of papilla, the size of warts and also the number of cells. From *Ph. fusiforme* Schroet. the number of cells and the form of the uppermost cell appear to warrant sufficient disagreement. *Ph. Rosae-multiflorae* Diet. again varies from this species in respect of the color and form of pedicel and the number of cells.

F. VON THÜMEN (26) recorded the occurrence of *Ph. subcorticium* (Schrank.) Wint. upon *Rosa dahurica*. But the species in question, though parasitic on the same host plant, sufficiently proves beyond doubt its identity to *Ph. americanum* (Pk.) Diet. rather than to *Ph. subcorticium.* (Schrank) Wint

3. **Phragmidium fusiforme** Schroet., Brand- und Rostpilze Schles, p.24; Schroet, Pilze Schles., p.354; Sacc., Syll., VII. p.747; Plowr., British Ured. and Ustilag., p 256; Fischer, Ured. d. Schweiz, p.404; Diet., Hedwigia, Bd.44, 1905.

Icon: Fischer, Ured., p.405, fig.283; Dietel, Hedwigia, Bd.44, 1905, pl. IV. fig.3; Ludwig, F., Lehrb. d. Kryptogamen, p 465, fig.18.

Host and distribution.

On *Rosa acicularis* Lindl.

Prov. Iburi, Mukawa (II. III. C. YENDO, Aug. 24, 1895)

Saghalien, Vladimirohuka (II. III. T. MIYAKE, Aug. 22, 1906)

REMARKS:— The present species was idenified several years ago by Prof. Dr. K. MIYABE and Mr. T. MIYAKE. Its occurrence in Japan, I believe has not yet been published in any paper. DIETEL states that the fungus is known so far to be restricted to the central Europe. It should therefore be of special interest to find it out in north Japan. The present species will readily be recognised by its many celled and thin septated teleutospores. E. M. FREEMAN gives us an account of *Ph. subcorticium* (Schrank.) Wint. on *Rosa acicularis* from Minnesota, U. S. A. But the character of our type leaves no doubt about its identity with *Ph. fusiforme* Schroet.

4. **Phragmidium japonicum** Diet., Engl. bot. Jahrb., Bd. 27, 1900, p.567; P. Henn., Engl. bot. Jahrb., Bd. 31, 1902, p.732; Sacc., Syll., XVI. p.316.

Icon: Dietel, Engl. bot. Jahrb, Bd. 27, 1900, pl.VI. fig.8.

Hosts and distribution.

On *Rosa multiflora* Thunb.

Prov. Hizen, Omura (III. Y. OKA, May. 1897)

Prov. Harima, Himeji (III. Y. TAKAHASHI, June 10, 1899)

Prov. Sagami, Misaki (III. N. HIRATSUKA, Aug. 6, 1898)

Prov. Musashi, Hodogaya (III. T. MIYAKE, July 27, 1903)

Prov. Ugo, Warabioka (III. K. MIURA, Aug. 27, 1905)

„ „ Mt. Chokai (III. „ „ „)

On *Rosa Wichuriana* Crep.

Prov. Tosa, Kodono (III. T. YOSHINAGA, May 18, 1908)

Prov. Mino, Gifu (III. E. TOKUBUCHI, June 3, 1899)

Prov. Suruga, Gotemba (III. K. MIURA, July 12, 1907)

„ „ Fujisan (III. „ „ 13, „)

Prov. Musashi, Tokyo III. S. KUSANO, Oct. 16, 1893)

„ „ Hodogaya (III. T. MIYAKE, July 26, 1903)

On *Rosa Luciae* Fr. et Sav.

Prov. Settsu, Kobe (III. K. MIYABE, Sept. 5, 1899)

Prov. Awa, Mera (III. K. MIYABE, July 29, 1893)

REMARKS:— This endemic species was described by DIETEL in 1900 from a specimen collected by S. KUSANO in Tokyo. It is widely distributed throughout Honshū, Shikoku, and Kiushū. But it has not been found in Hokkaidō so far. The fact, that only one germ-pore is present in the upper end of each cell, is unique for *Phragmidium*. According to the generic character of *Phragmidium* accepted by such authorities as TULASNE, DIETEL, MAGNUS and LAGERHEIM, the number of the germ-pores are more than two in each cell. DIETEL remarks that the species may belong to the genus *Kuhneola* which MAGNUS founded on *Ph. albidum* (Kuhn.) Ludw. Yet for the present, we shall retain our species in the genus *Phragmidium*.

5. **Phragmidium Rosæ-multifloræ** Diet., Hedwigia, Bd. 44, 1905, p. 132.

Icon: Dietel, Hedwigia, Bd. 44, 1905, pl. IV. fig. 8.

Hosts and distribution.—

On *Rosa multiflora* Thunb.

Prov. Tosa, Hane-mura (III. T. YOSHINAGA, Oct. 10, 1908)

Prov. Iyo, Gosho-mura (II. K. SENGOKU, June 26, 1900)

„ „ Maruho-mura (III. M. OKUDAIRA, June 15, 1902)

„ „ Misakatōge (II. „ May 20, 1899)

Prov. Bizen, Machikanda (III. I. KONDO, July 20, 1908)

Prov. Musashi, Takao (III. S. KUSANO, Oct. 1899)

Prov. Shimotsuke, Nikkō (III. G. YAMADA et J. HANZAWA, Aug. 6, 1900)

Prov. Echigo, Yahiko (II. III. S. ITO, July 23, 1908)

„ „ Yahagi (II. III. „ „ 22, „)

„ „ Tsubame (II. III. „ „ 26, „)

„ „ Gomadō (II. III. „ Aug 20, 1908)

Prov. Rikuchū, Kuzumaki (I. II. III. M. MIURA, July 6, 1907)

Prov. Rikuchū, Iwatezan (II. S. ARIMOTO, July 16, 1903)

Prov. Rikuchu, Asakishi-mura (III. Y. TAKAHASHI, Sept. 26, 1897)

Prov. Rikuchu, Morioka (I. II. G. YAMADA, May 24, 1903)

Prov. Ugo, Sakata (III. G. YAMADA, Aug. 2, 1901)

„ „ Senhoku-gun (I. II. E. TOKUBUCHI, July 12, 1897)

„ „ Akita (II. III. T. YOSHINO, July 1896)

Prov. Mutsu, Goshogawara (III. T. KASHIWAI, Oct. 1904)

Prov. Oshima, Hakodate (III. K. MIYABE, July 10, 1890)

Prov. Ishikari, Sapporo (III. E. TOKUBUCHI, June 28, 1891)

Prov. Ishikari, Sapporo (I. II. III. M. KASAI, June 28, 1908)

Prov. Ishikari, Sapporo (III. M. KASAI, Sept. 24, 1907)

Prov. Ishikari, Makomanai (III. M. KASAI, Nov. 1, 1908)

On *Rosa laevigata* Mich.

Prov. Tosa, Yoshiwaragoe (H. T. YOSHINAGA, Jan. 1908)

REMARKS:— This is also one of the endemic species of *Phragmidium* of our country. This species was erroneously identified to *Ph. subcorticium* (Schrank.) Wint. by DIETEL in 1901 (Engl. bot. Jahrb., Bd. 28, p. 285). The same specimen collected by S. KUSANO at Takao, on which DIETEL made his determination in 1901, is also found in our College Herbarium. An examination of the specimen shows us that it is nothing but *Ph. Rosae-multiflorae* Diet. In Hedwigia, Bd. 44, p. 132, our present species was first described by DIETEL. He mentions there only the name of the collector, S. KUSANO, without giving the locality and the date of the collection. He might have used, as it seems to be the case, the same specimen of 1901 from S. KUSANO over again. The best criterion, by which this species is distinguished from *Ph. subcorticium* (Schrank.) Wint. is its smooth, beautiful, flavated pedicel whose upper half is of a deep yellowish color. The teleutospores make their appearance very early in summer. I got many specimens of them by the end of June last year in the vicinity of Sapporo. This is the only species on *Rosa multiflora* in Hokkaidō, as *Ph. japonicum* Diet. has not yet been found here on the same host so far. On *Rosa laevigata* Mich. the teleutospores are not yet found. Mr. T. YOSHINAGA informed me, in his letter accompanied to the specimen, that the uredostage on the host above named was identified to *Ph. Rosae-multiflorae* Diet. by DIETEL.

6. **Phragmidium Rosæ-rugosæ.** n. sp.

Caeomata forming a large dense cushion on stems, petioles, and fruits, and on the lower surface of leaves often causing a remarkable deformation, bright orange; paraphyses club-shaped, contents yellow, granular; cæomaspores polygonal or globose, epispore minutely warty, hyaline, contents granular, orange yellow; 22-24 mmm. in diam., germ-pores 3-4.

Uredosori hypophyllous, yellow, minute, orbicular, scattered or crowded; paraphyses linear cylindrical, generally slightly curved; uredospores globose, ovate or polygonal, diameter 16-22 mmm., contents yellow, epispore finely echinulate, 2 mmm. thick, colorless; germ-pores 4-5.

Teleutosori hypophyllous, scattered or loosely aggregated, brown to chestnut-brown, not black, readily detachable; teleutospores cylindrical, rounded at both ends, brownish-yellow; papilla obtuse, very short (4-6 mmm.), yellow; 7-11 celled (some-

times 4-6), 72-128 × 28-32 mmm.; two end cells generally longer (12-16 mmm.) than the rest (8 mmm.); epispores 4-7 mmm. thick, brown, warty; germ-pores 3 in each cell (even in the apical cell); wall of the pedicel pale yellow towards apex, more or less swelled in the basal part, 100-150 mmm. long.

Host and distribution.

On *Rosa rugosa* Thunb.

Prov. Ishikari, Sapporo (III. K. MIYABE, Oct. 1889)(II. K. MIYABE, July 1892)(I. K. MIYABE, July 1890)(I. II. III. M. KASAI, Oct. 30, 1908)(I. M. KASAI, June 14, 1908)
„ „ Garugawa (III. M. MIURA, Sept. 22, 1907)(II. III. M. KASAI, Oct. 17, 1908)
„ „ Ishikari (III. J. HANZAWA, Oct. 17, 1908)
„ „ Shinoro (III. G. YAMADA, Sept. 23, 1892)
Prov. Oshima, Kamiiso (II. K. MIYABE, July 12 1890)
Prov. Shiribeshi, Okushiri (II. K. MIYABE, July 31, 1980)
„ „ Zenibako (II. III. M. KASAI, Oct. 17, 1908)
Prov. Hidaka, Samani (II. E. TOKUBUCHI, Aug. 9, 1892)
„ „ Niikapp (I. M. KASAI, July 12, 1907)
„ „ Atsubetsu (I. „ „ 9. „)
Prov. Kushiro, Kushiro (II. T. KAWAKAMI, Sept. 1896)
Prov. Nemuro, Nemuro (II. G. SUGIYAMA, Aug. 1891)
Prov. Iburi, Matsushima (II. III. K. MIURA, Sept. 20, 1905)
Rishiri-Island (II. T. KAWAKAMI, Sept. 1, 1899)
„ (II. III. M. MIURA, Aug. 15, 1907)
Rebun-Island (III. M. MIURA, Aug. 24, 1907)
Kurile, Etorofu (I. II. T. KAWAKAMI, Aug. 15, 1898)

REMARKS:— Comparing this with other species of *Phragmidium* already known to grow on *Rosa*, I am disposed to regard it as a new species.

BANDI (1) makes the statement that *Ph. subcorticium* (Schrank.) Wint. fails to attack *Rosa rugosa* even when artificially infected. *Rosa arkansana*, *R. blanda*, *R. setigera*, *R. foliosa*, *R. nitida*, *R. Engelmanii*, *R. gymnocarpa*, *R. pisocarpa*, *R. Woodsii*, *R. rubiginosa*, *R. rubrifolia*, and *R. lucida* in the Botanical garden of our College have proved to be perfectly immune to *Phragmidium*, while *Rosa rugosa*, planted near by, is seriously infected by two different species of *Phragmidium*, both of which are peculiar to our country; namely *Ph. Rosae-rugosae* n. sp. and *Ph. yezoense* n. sp. Macroscopically the present species is allied to *Ph. subcorticium* (Schrank.) Wint. with regard to the form of its cæomata and other stages. But in the following points they are at variance.

	Ph. subcorticium.	*Ph. Rosae-rugosae.*
Teleutosori	black	brown.

Teleutospore	brownish-black	yellowish-brown
Number of cells	4–9	7–11
General form	fusiform or subcylindrical	cylindrical
Papilla	long (10-12 mmm.)	very short (4-6 mmm.)
Pedicel	conspicuously bulbous (100-120 mmm. long)	slightly inflated (150 mmm. long)

REMARKS:— From *Ph. yezoense* n. sp. this species differs by the colour of its teleutosori as well as by that of the teleutospores. The general form of the teleutospores and the shape of papilla also show sharp points of their dissimilarities. The characteristics of *Ph. Rosae-rugosae* n. sp lie in the very short papilla, a cylindrical outline and also in the brownish-yellow color of its teleutospores. I have often noticed that in the lower part of the pedicel, where fine spiral striation often comes to view, the outer portion of the wall, on a long treatment with potash or water, swells up and melts away leaving the innermost layer of the wall comparatively unchanged.

7. **Phragmidium yezoense** n. sp.

Teleutosori on petioles large, aggregated, often elongated; on the under surface of leaves, small, densely scattered or crowded, black (not brown), readily detachable; teleutospores fusiform, subcylindrical or subclavate, dark-brown, never yellowish-brown, 5-10 celled; attenuated or rounded at both ends, uppermost cell longer than the rest; apical papilla conical or awl-shaped, pale-yellow, generally 6-10 mmm., often rough at its tip; not constricted at septum; 72-108 × 28-32 mmm.; wall thick, verrucose; germ-pores 2-3 in each cell; pedicel pale-yellow in the upper part, more or less bulbous in the lower half (16 mmm. broad), up to 150 mmm. long.

Host and distribution.

On *Rosa rugosa* Thunb.

Prov. Mutsu, Goshogawara (III. T. KASHIWAI, Nov. 1904)
Prov. Iburi, Matsushima (III. K. MIURA, Sept. 20, 1905)
Prov. Shiribeshi, Raidentōge (III. G. YAMADA, Oct. 5, 1900)
„ „ Zenibako (III. M. KASAI, Oct. 17, 1908)
Prov. Ishikari, Sapporo (III. K. MIYABE, Sept. 10, 1895)
„ „ „ (III. M. KASAI, Oct. 30, 1908)
Kurile, Shumushu (III. S. YOKOYAMA, Sept. 22, 1892)
Saghalien, Nayoro (III. T. MIYAKE, Sept. 9, 1906)
„ Pelwayapedji (III. „ Oct. 12. 1906)

REMARKS:— Most probably this is the species that some of our mycologists

have taken to be identical with *Ph. subcorticium* (Schrank.) Wint. BANDI (1) informs us, that *Ph. subcorticium* (Schrank) Schroet. does not inhabit on *Rosa rugosa* which is the host of the species in question. In fact this species differs from the above-named in more than one point. Macroscopically it shows a large and elongated cushion of teleutosori upon the petiole, which, indeed, is neither found nor anywhere mentioned to be seen in the case of *Ph. subcorticium* (Schrank.) Wint. Microscopically they disagree not only in the shape and size of the pedicel but also in the nature of the papillum. Taking again the respective number of cells into consideration we frequently come to another point of dissimilarity; for in the case of *Ph. subcorticium* (Schrank.) Wint. there always exist 7 or 8 cells only, while 10 celled form in our species is comparatively often met with. Neither can this species be identical with *Ph. Rosae-sterigerae* Diet. of North America. They differ from each other in the size of the teleutospores, and also in the color of the papilla as well. Distinction between this species and *Ph. americanum* Diet. is also easily noticeable, as we have already discussed in detail under the latter species.

On **RUBUS.**

8. **Phragmidium Barnardi** Plowr. et Wint., var. **pauciloculare** Diet., Engl. bot. Jahrb., Bd. 32, 1902, p.49; Diet., Hedwigia, Bd. 44, 1905, p.344; P. Henn., Engl. bot. Jahrb., Bd. 31, 1903, p.732; Sacc., Syll., XVII. p.399; Diet., Ann. Mycol., Bd. 6, 1908, p.227.

Hosts and distribution.

Prov. Iyo, Maruho-mura (II. M. OKUDAIRA, June 17, 1992)
Prov. Tosa, Kamoda-mura (III. T. YOSHINAGA, Nov. 1907)
Prov. Settsu, Kōbe (II. K. MIYABE, Sept. 5, 1889)
Prov. Mino, Ōgaki (II. E. TOKUBUCHI, Dec. 28, 1898)
„ „ Gifu (II. III. „ Oct. 1898)
Prov. Musashi, Ōji (III. K. SENGOKU, Oct. 29 1895)
„ „ Urawa (III. N. NAMBU, Nov. 15, 1899)
Prov. Echigo, Gomadō (II. S. (TO, Aug. 20, 1908)
„ „ Yahagi (II. S. ITO, July 22, 1908)
Prov. Mutsu, Goshogawara (III. T. KASHIWAI, Oct. 1904)
„ „ Furumaki (II. K. SENGOKU, Oct. 4, 1895)
Prov. Iburi, Numanohata (III. K. MIYABE et G. YAMADA, Nov. 1, 1900)
„ „ Oiwake (III. „ „ Oct. 30, 1900)
„ „ Mombetsu (II. K. MIYABE, Aug. 14, 1890)
Prov. Shiribeshi, Zenibako (II. III. K. MIYABE, Oct. 5, 1891)
„ „ „ (II. III. „ Sept. 9, 1896)

Prov. Shiribeshi, Zenibako (III. G. YAMADA, Oct. 20, 1899)
Prov. Ishikari, Maruyama (I. J. HANZAWA, May 8, 1901)
„ „ „ (III. M. KASAI, Sept. 10, 1908)
„ „ „ (I. T. MIYAKE, June 8, 1901)
„ „ Moiwa (III. T. MIYAKE, Oct. 26, 1902)
„ „ Makomanai (III. M. KASAI, Aug. 15, 1907)
„ „ Ishiyama (III. M. KASAI, Sept. 15, 1907)
„ „ Ishikari (III. G. YAMADA, Oct. 24, 1899)
„ „ Asahigawa (III. K. MIURA, Oct. 10, 1906)
„ „ Shimofurano (III. M. KASAI, Sept. 20, 1908)
„ „ Chikabumi (III. T. MIYAKE, Sept. 1905)
„ „ Kamuikotan (III. M. KASAI, Sept. 27, 1908)
„ „ Sapporo (III. K. MIURA, Oct. 30, 1906)(I. K. MIURA, June 5, 1906) (II. E. TOKUBUCHI, Aug. 1895)(I. II. E. TOKUBUCHI, June 30, 1890)(II. III. E. TOKUBUCHI, Sept. 1895)(III. E. TOKUBUCHI, Oct. 1896)(I. K. MIYABE, June 1890)(II. III. K. MIYABE, Oct. 1889)(I. K. MIYABE, June 21, 1892)(II. III. K. MIYABE, Aug. 25, 1891)(III. T. MIYAKE, Oct. 21, 1902) (II. III. M. KASAI, Sept. 13, 1908)(II. III. M. KASAI, Aug. 25, 1907)(III. M. KASAI, Oct. 10, 1907)(III. M. KASAI, Sept. 29, 1907)

On *Rubus phoenicolasius* Maxim.

Prov. Shiribeshi, Zenibako (III. G. YAMADA, Oct. 20, 1899)

REMARKS :— This endemic species was first described by DIETEL in 1903 as a variety of *Ph. Barnardi* Plowr. et Wint., which is an Australian species on *Rubus parrifolius*. But the host of the present variety is not restricted to *Rubus parvifolius* only. For it has been found on *Rubus phoenicolasius*, and is also reported to attack *Rubus rosaefolius* Sm. var. *minor* Hak. As to the *Rubus parvifolius* of Japan, MATSUMURA (20) regards it as synonymous with *Rubus triphyllus*. If it is really so, the Australian host, on which DIETEL lays so much stress in drawing his conclusion, becomes a different thing from the so-called *Rubus parvifolius* of our land. Compared with the description and the photographic figures given by MCALPINE our species appears to vary in divers points from the Australian type, so far as the morphological characters are concerned. All these reasons readily tend us to throw doubts on the correctness of taking this species as a variety of *Ph. Barnardi* Plowr. et Wint. But for the present we shall stick to the present name which is so familiar to us.

9. **Phragmidium griseum** Diet., Engl. bot. Jahrb., Bd. 32, 1903, p.49 ; Sacc., Syll., XVII, p.899 ; Diet., Hedwigia, Bd. 44, 1905, p.344.

Host and distribution

On *Rubus incisus* Thunb.

Prov. Tosa, Kamo-mura (II. III. T. YOSHINAGA, Aug. 15, 1905)
Prov. Kozuke, Myogisan (II. III. S. KUSANO, Nov. 4, 1899)
Prov. Shimotsuke, Nikko (II. III. G. YAMADA & J. HANZAWA, Aug. 6, 1900)

REMARKS:— This is also one of our endemic species described by DIETEL in 1903. Among the few specimens I have had the occasion to examine, the one received from S. KUSANO may be regarded as the best representative of the type. It has two germ-pores in the uppermost cell of the teleutospore, situated a little above the middle of the cell, while in the other cells there are three set closely under the septum. The general character of the teleutospore bears much resemblance to that of *Ph. Yoshinagai* Diet. DIETEL holds the length, the papillum and the constriction at septum as the distinctive points of their teleutospores. But many well constricted and conically papillated teleutospores of *Ph. Yoshinagai* Diet. have come under my observation which seem to stand in contradiction to DIETEL's remarks to a certain degree.

10. **Phragmidium heterosporum** Diet., Engl. bot. Jahrb., Bd. 22, 1903, p.626; Sacc., Syll., XVII, p.399; Diet., Hedwigia, Bd. 44, 1905, p.344.

Host and distribution.

On *Rubus trifidus* Thunb.

Prov. Tosa, Kōdono (II. T. YOSHINAGA, Jan. 1908)
Prov. Izu, Itō (II. S. KUSANO, Jan. 3, 1900)

REMARKS:— This species is also endemic to our country. The first account of it was given by DIETEL in 1903 after examining the specimen collected by S. KUSANO at Ito, Prov. Izu. The materials I have examined were all in the uredostage. DIETEL made remarks concerning the affinity of this species with *Ph. obtusum* (Strauss) Wint. I have, however, hardly, any thing to say on this species, as I have not been able to observe the teleutospores myself.

11. **Phragmidium Nambuanum** Diet., Ann. Mycol., Bd. VI, 1908, p.227.

Host and distribution.

On *Rubus occidentalis* L. var. *japonica* Miyabe.

Prov. Iburi, Eniwasan (II. III. K. MIYABE et S. ARIMOTO, Aug. 6, 1902)
Prov. Ishikari, Moiwa (III. G. YAMADA, Oct. 17, 1897)
„ „ „ (II. III. K. MIYABE, Oct. 19, 1803)
„ „ „ (II. III. „ Oct. 11, 1901)
„ „ „ (III. „ Nov. 3, 1897)

REMARKS:— This species is also one of our endemic forms of *Phragmidium*,

recently described by DIETEL. The teleutosori resemble those of *Ph. Rubi-Idaei* (Pers.) Wint. on *Rubus Idaeus* var. *strigosus*. But under the microscope *Ph. Nambuanum* Diet. will at once be distinguished by its characteristic broad, stout and cylindrical teleutospores, conspicuous for the absence of papillum. This fungus is comparatively common in the vicinity of Sapporo.

12. **Phragmidium Rubi** (Pers.) Wint., Pilze, p.230; Sacc, Syll., VII. p.745; Schroet., Pilze Schles., p.353; Plowr., British Ured. and Ustilag., p.224; Fischer, Ured. Schweiz, p.418; Tubeuf, Handb., p.375; Klebahn, Zeits. f. Pflanzenkr., Bd. 17, 1907, p.140–142.

Icon.: Fischer, Ured. d. Schweiz, p.418, fig.290; Plowr., British Ured. and Ustilag., pl. VI, fig.5; Tubeuf, Handb., p.375. fig.173; Ludwig, Lehrb. d. Kryptogamen, p.475. fig.16.

Host and distribution.

On *Rubus arcticus* L.

Saghalien, Kusunnai (III. T. MIYAKE, Sept. 8, 1907)
„ Shikka (III. „ Aug. 20, 1906)
„ Solowiyohuka (III „ Sept. 20, 1907)

REMARKS:— This species is a new addition to our flora. *Rubus arcticus* L. seems to be a new host for this fungus. *Uredo arcticus*, recorded by LAGERHEIM (15) as living on the same host plant, appears to have no connection whatsoever with our present *Phragmidium*. The number of cells, a sharp papillum and shorter pedicel are the characters which distinguish *Ph. Rubi* (Pers.) Wint. from *Ph. Rubi-Idaei* (Pers.) Wint. and *Ph. Rubi-japonici* n. sp. So far as our present knowledge is concerned, this species is found in Japan only in the Saghalien Island.

13. **Phragmidium Rubi-Idaei** (Pers.) Wint., Die Pilze, p.231; Sacc., Syll., VII, p.448; Fischer, Ured. Schweiz, p.420; Schroet., Pilze Schles., p.355; Plowr., British Ured. and Ustilag., p.226; Klebahn, Zeits. für Pflanzenkr., Bd. 17, 1907, p.141-142.

Icon: Dietel, Engl. u. Plantl, Pflanzenfam., 1. 1. p.71. fig.47. D; Fischer, Ured. d. Schweiz, p.420. fig.291; Ludwig, Lehrb. d. Kryptogamen, p. 475. fig.15.

Host and distribution.

On *Rubus Idaeus* L. var. *strigosus* Maxim.

Kurile, Kanashiri, Zembekotan (III. H. TANAKA, Aug. 1893)

Prov. Ishikari, Jozankei (III. G. YAMADA, Oct. 12, 1902)
„ „ Moiwa (II. III. T. MIYAKE, Oct. 4, 1903)
„ „ Misomai (III. K. MIYABE, Oct. 11, 1905)
„ „ Misomai (III. J. HANZAWA, Oct. 11, 1905)
„ „ Ishiyama (III. „ „ „)

REMARKS : — This is also one of the species newly added to our flora. The fungus is comparatively abundant in the vicinity of Sapporo. Comparing our plant to the North American specimens of *Ph. Rubi-Idaei* (Pers.) Wint. preserved in our College Herbarium there remains hardly any doubt as to their identity. *Ph. Rubi-Idaei* (Pers.) Wint. differs from *Ph. Rubi* (Pers.) Wint. by the number of the cells and by the shape of the papillum of the teleutospores. Also in spite of the many apparent similarities existing between this species and *Ph. Rubi-japonici* n. sp., they differ from each other in the length of the pedicel, and also in the form of the uppermost cell.

14. **Phragmidium Rubi-japonici** n. sp.

Teleutosori hypophyllous, scattered, pulverulent, loose and black ; teleutospores subcylindrical, 6-11 celled, 72-120 × 24-28 mmm., tapering or rounded at apex, papillum acute, base rounded, not constricted at septum, uppermost cell longer than the rest ; epispore thick, dark-brown, verrucose ; germ-pores 3 or 4 in each cell ; pedicel shorter than or same as the spore-length, 60-110 mmm., flavate at the base and yellowish in the upper part.

Host and distribution.

On *Rubus japonicus* Maxim.

Prov. Ishikari, Jozankei (III. G. YAMADA, Oct. 12, 1902)
„ „ „ (III. M. MIURA, Oct. 17, 1909)
„ „ „ (III. T. MIYAKE, Oct. 17, 1909)

REMARKS :— The fungus under consideration was at first taken to be identical with *Ph. Rubi-Idaei* (Pers.) Wint. But after all we are rather inclined to regard it as a new species. Our present type is easily distinguished from *Ph. Rubi-Idaei* (Pers.) Wint. by the shorter pedicel and also by the acute papillum of its teleutospore. Besides *Rubus japonicus*, being herbaceous, varies widely in its habit from *Rubus Idaeus* var. *strigosus*.

15. **Phragmidium Rubi-Thunbergii** Kusano, Tokyo Bot. Mag., Vol. 18, 1904, p.147 ; Diet., Engl. bot. Jahrb., Bd. 37, 1905, p.104 ; Diet., Hedwigia, Bd. 44, 1905, p.344.

Host and distribution.

On *Rubus Thunbergii* S. et Z.

Prov. Iyo, Iwayama (H. M. OKUDAIRA, May 21, 1899)
Prov. Settsu, Kōbe (H. K. MIYABE, Sept. 5, 1889)
Prov. Sagami, Hakone (H. K. MIYABE et G. YAMADA, April 12, 1901)
" " " (H. K. MIYABE, April 12, 1901)
" " " (H. N. HIRATSUKA, Aug. 2, 1898)
Prov. Musashi, Tōkyō (H. S. HORI, April 17, 1900)
" " " (III. M. SHIRAI, Nov. 1905)
" " Hachioji (H. Y. TAKAHASHI, July 27, 1893)

REMARKS:— This species is also endemic to our country. KUSANO's original description is said to have reached DIETEL, while his paper on *Phragmidium* in 1905 was in the press. However, DIETEL made a short remark on this species under *Ph. Rubi* (Pers.) Wint. var. *miniatum* J. Müll., saying "Als eine neue, in dieser Arbeit noch nicht berücksichigte Art erhielten wir während des Druckes noch *Ph. Rubi-Thunbergii* Kusano auf *Rubus Thunbergii* S. et Z. aus Japan. Sie ist den anderen japanischen Art sehr ähnlich". But nobody will think, that the present species is allied to *Ph. Rubi* (Pers.) Wint. var. *miniatum* J. Müll., when he once observed the smooth epispore of the former. In reality, the smoothness of the epispore of *Ph. Rubi-Thunbergii* Kusano was not mentioned in the original description of this species. Through the kindness of Prof. M. SHIRAI I got a specimen of the teleutostage of the present species. Under the microscope the teleutospore disclosed its resemblance to *Ph. griseum* Diet. in the character of the papillated apex and of the constriction at septum. But, as the author of the species well noticed in his remarks, the number of the germ-pores in each cell are 2, while in the case of *Ph. griseum* they are generally 3. The length of the pedicel of the present species is also always shorter than that of *Ph. griseum*.

16. **Phragmidium Yoshinagai** Diet., Engl. bot. Jahrb., Bd. 34, 1905, p.586; Diet., Engl. bot. Jahrb., Bd. 37, 1905, p.104; Diet., Ann. Mycol., Vol. VI, 1908, p.227; P. Hennings, Engl. bot. Jahrb., Bd. 34, 1905, p.596.

Hosts and distribution.

On *Rubus morifolius* Sieb.

Prov. Tosa, Imai (III. T. YOSHINAGA, Oct. 4, 1908)

On *Rubus crataegifolius* Bge.

Prov. Iwaki, Tōgatta (H. III. K. MIYABE, Aug. 28, 1893)
Prov. Iwate, Asakishi-mura (H. III. Y. TAKAHASHI, Sept. 26, 1897)

Prov. Rikuchu, Tsunagi-mura (III. Y. TAKAHASHI, June 17, 1897)
Prov. Mutsu, Hirosaki (III. N. HIRATSUKA, Sept. 29, 1897)
Prov. Oshima, Nanae-mura (III. T. MIYAKE, Aug. 11, 1897)
„ „ Hakodate (III. K. MIYABE, July 10, 1890)
Prov. Shiribeshi, Kumaishi (III. „ „ 25, 1890)
„ „ Otaru (III. G. YAMADA, Aug. 1898)
„ „ „ (III. T. KAWAKAMI, Oct. 1898)

REMARKS:— Mr. T. YOSHINAGA kindly sent me, on request, a part of the type specimen on *Rubus morifolius*, with which I was able to compare our Hokkaido forms on *Rubus crataegifolius*. On examination I came to know that they are doubtlessly the same as *Ph. Yoshinagai* Diet. Only point of difference is that 6-celled teleutospores are comparatively often encountered in the case of the Hokkaido-forms, while in the Tosa specimen the spores are always composed of less than five cells.

On **SANGUISORBA.**

17. **Phragmidium carbonarium** (Schlechts.) Wint., Die Pilze, p.227; Fischer, Ured. d. Schweiz, p.406; Sacc., Syll., VII, p.751; Plowr., British Ured. and Ustilag., p.227; Schroet., Pilze Schles., p.355; Dietel, Engl. bot. Jahrb., Bd. 27, 1900, p.567; Dietel, Hedwigia, Bd. 44, p.346; P. Hennings, Engl. bot. Jahrb., Bd. 27, p.147.

Icon.: Fischer, Die Ured. d. Schweiz, p.407, fig.284; Dietel, Engl. u. Plantl, Pflanzenfam., 1. 1. p.71. fig.47. E; Ludwig, Lehrb. d. Kryptogamen, p.475. fig.22.

Hosts and distribution.

On *Sanguisorba tenuifolia* Fisch. var. *alba* Trautv. et Mey.

Prov. Shinano, Yatsugadake (III. T. MIYAKE, Aug. 5, 1903)
Prov. Ishikari, Kita-mura (I. K. MIURA, May 24, 1906)
„ „ Sapporo (I. „ „ 26, 1906)
„ „ Horomui (I. G. YAMADA, July 3, 1902)(I. III. G. YAMADA, July 30, 1900)(I. III. S. ITO, July 8, 1908)
„ „ Fukagawa (I. III. T. MIYAKE, July 10, 1901)
„ „ Sarugawa (I. III. K. MIYABE, July 9, 1891)
„ „ Tobetsu (I. I. SHIMIZU, July 21, 1890)
„ „ Tsuishikari (I. III. S. ITO, July 1907)
Prov. Oshima, Hakodate (III. K. MIYABE, July 10, 1894)
„ „ Izumizawa (III. „ „ 13, 1890)
„ „ Kamiiso (III. „ „ 12 1890)

Prov. Hidaka, Samani (III. Y. TOKUBUCHI, Aug. 8, 1892)
" " Numanohata (I. III. M. KASAI, July 7, 1907)
" " Niikapp (I. III. " " 20, 1907)
Prov. Iburi, Oshamambe (I. G. YAMADA, July 26, 1807)
" " Mororan (I. K. MIYABE, June 10, 1900)
" " " (III. G. YAMADA, Aug. 3, 1898)
Rishiri Island, Oshitomari (III. T. KAWAKAMI, July 21, 1899)
Kurile Island, Etrofu, Shana (I. K. MIURA, July 11, 1906)
" " " Toro (I. " " 24, 1906)
" " Shakotan (III. T. KAWAKAMI, Aug. 1, 1898)
" " Etrofu, Shana (III. " " 3, 1898)

On *Sanguisorba officinalis* L.

Prov. Musashi, Tōkyō (III. S. KUSANO, May 30, 1897)
Prov. Shimotsuke, Nikkō (I. III. G. YAMADA et J. HANZAWA, Aug. 6, 1900)
Prov. Rikuchu, Morioka (III. S. ARIMOTO, July 15, 1903)

On *Sanguisorba canadensis* L. var. *media* Maxim.

Prov. Ugo, Chōkaizan (I. K. MIURA, Aug. 28, 1905)
Prov. Uzen, Gwassan (III. " " 13, 1905)
" " " (III. G. YAMADA, Aug. 7, 1601)
Prov. Iwaki, Zuwozan (III. K. MIYABE, Aug. 29, 1893)
Prov. Rikuchu, Iwatesan (III. " Sept. 4, 1893)
Kurile Island, Urup (I. K. MIURA, July 8, 1905)

REMARKS:— This fungus is very common in northern Japan.

CONCLUSION.

In the preceeding pages it has been my endeavour to enumerate the seventeen species of *Phragmidium* found in Japan. These embrace ten species hitherto found in our country, four that have been unknown to us up to this day, and three that appear to be quite new to science. Among these seventeen species eleven are found only in this country.

Though proper justice has been done in their respective places, it seems worth while to discuss briefly how the mistake with regard to the identification of *Ph. subcorticium* (Schrank.) Wint. and *Ph. Fragariastri* (DC.) Schrœt. occurred.

Originally *Ph. subcorticium* (Schrank.) Schrœt. was a European species. It was subsequently introduced into America and Australia. So far as our knowledge goes this species is not found at all in our country. It is true that reference to it is found in all our writings on this genus. But of these writings one of DIETEL is the earliest and practically the basis of all subsequent works. It has been my

good fortune to get from the College Herbarium the very specimen (No. 92) collected by Prof S. KUSANO at Mt. Takao, Prov. Musashi, on June 11, 1899, which DIETEL reported upon as *Ph. subcorticium* (Schrank.) Wint. in 1901. Under the microscope the above mentioned specimen showed to be nothing but *Ph. Rosae-multiflorae* Diet. At the time of describing *Ph. Rosae-multiflorae* Diet. in 1905, DIETEL did not give us the date and locality for the specimen, on which he founded this new species. He only mentioned KUSANO, the collector's name. This fact makes it probable, that DIETEL used the same specimen in both occasions.

As regards the existence of *Ph. Fragariastri* (DC.) Schroet. in Japan, frequent references are met with in our literature. Both kinds of specimens on which P. HENNINGS made his report have been also in our possession. While I was engaged in the study of those specimens they appeared to us upon examination to differ in no way from *Pucciniastrum Potentillae* Kom. This fact drew us on to a further study and closer examination of the above named *Pucciniastrum*. In the course of my study my attention was directed to DIETEL's remark under *Pucciniastrum Potentillae* Kom., in his Uredineen Japonicæ VI. (p.105), where he clearly sets down as follows; namely "Es ist dies Pilz *(Pucciniastrum Potentillae Kom.)*, der von P. HENNINGS in Fungi japonici IV als *Ph. Fragariastri* (DC.) Schroet. aufgeführt ist." This remark of DIETEL fully agrees with and corroborates what I had found to be the fact. Under *Ph. Potentillae* (Pers.) Karst., I have already said that in our country *Ph. Fragariastri* (DC.) Schroet. has not yet been found.

HOST-INDEX.

1. **Potentilla** L.

Potentilla chinensis Ser. ..... *Phragmidium Potentillae* (Pers.) Karst.
Potentilla cryptotaeniae Maxim. ..... „
Potentilla Dickinsii Er. et Sav. ..... „
Potentilla gelida C. A. Mey. ..... „
Potentilla Kleiniana W. et A. ..... „

2. **Rosa** Tourn.

Rosa acicularis Lindl. ..... *Phragmidium fusiforme* Schroet.
Rosa dahurica Pall. ..... *Ph. americanum* (Pk.) Diet.
Rosa laevigata Mich. ..... *Ph. Rosae-multiflorae* Diet.
Rosa luciae Pr. et Roch. ..... *Ph. japonicum* Diet.

Rosa multiflora Thunb. ..... *Ph. japonicum* Diet.
„ ..... *Ph. Rosae-multiflorae* Diet.
Rosa rugosa Thunb. ..... *Ph. Rosae-rugosae* n. sp.
„ ..... *Ph. yezoense* n. sp.
Rosa Wichuriana Crep. ..... *Ph. japonicum* Diet.

3. **Rubus** L.

Rubus arcticus L. ..... *Phragmidium Rubi* (Pers.) Wint.
Rubus crataegifolius Bge. ..... *Ph. Yoshinagai* Diet.
Rubus Idaeus L. var. *strigosus*. ..... *Ph. Rubi-Idaei* (Pers.) Wint.
Rubus incisus Thunb. ..... *Ph. griseum* Diet.
Rubus japonicus Maxim. ..... *Ph. Rubi-japonici* n. sp.
Rubus morifolius Sieb. ..... *Ph. Yoshinagai* Diet.
Rubus occidentalis L. var. *japonicus*. ... *Ph. Nambuanum* Diet.
Rubus parvifolius L. ..... *Ph. Barnardi* var. *pauciloculare* Diet.
Rubus phoenicolasius Maxim. ..... „
Rubus Thunbergii S. et Z. ..... *Ph. Rubi-Thunbergii* Kusano.
Rubus rosaefolius Sm. var. *minor*. ..... *Ph. Barnardi* var. *pauciloculare* Diet.
Rubus trifidus Thunb. ..... *Ph. heterosporum* Diet.

4. **Sanguisorba** L.

Sanguisorba canadensis L. var. *media*. ... *Ph. carbonarium* (Schlecht.) Wint.
Sanguisorba officinalis L. ..... „
Sanguisorba tenuifolia Fisch. var. *alba*. ..... „

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EXPLANATION OF FIGURES IN PLATE I.

All the figures were drawn with the aid of a camera-lucida, magnification being about 390 times. *Ph. heterosporum* Diet. is not included being unable to get the teleutospore of the same.

Fig. 1. *Phragmidium Potentillae* (Pers.) Karst.
Fig. 2. *Phragmidium americanum* (Ph.) Diet.
Fig. 3. *Phragmidium fusiforme* Schroeter.
Fig. 4. *Phragmidium japonicum* Diet.
Fig. 5. *Phragmidium Rosae-multiflorae* Diet.
Fig. 6. *Phragmidium Rosae-rugosae* n. sp.
Fig. 7. *Phragmidium yezoense* n. sp.
Fig. 8. *Phragmidium Barnardi* Plower. et Wint. var. *paucioculare* Diet.
Fig. 9. *Phragmidium griseum* Diet.
Fig.10. *Phragmidium Nambuanum* Diet.
Fig.11. *Phragmidium Rubi* (Pers.) Wint.
Fig.12. *Phragmidium Rubi-Idaei* (Pers.) Wint.
Fig.13. *Phragmidium Rubi-japonici* n. sp.
Fig.14. *Phragmidium Rubi-Thunbergii* Kusano.
Fig.15. *Phragmidium Yoshinagai.* Diet.
Fig.16. *Phragmidium carbonarium* (Schlecht.) Wint.

摘　　要

一千九百〇五年**Dietel**氏は Hedwigia 誌上に於て *Phragmidium* に就き精細なる論文を公にし内に四十六種を記載せり。其後諸學者の研究に依りて發表せられたる種類は略八種に止まるが如し、故に

全世界に於て知られたる本屬菌類の全數は五十四種と計上するを得べし。今之れを文献に徴するに本邦に産するものは其内僅かに十二種に過ぎず。即ち *Ph. Potentillae* (Pers.) Karst, *Ph. Fragariastri* (DC.) Schrœt., *Ph. japonicum* Diet., *Ph. Rosae-multiflorae* Diet., *Ph. subcorticium* (Schrank.) Wint., *Ph. Barnardi* Plowr. et Wint. var. *pauciloculare* Diet, *Ph. griseum* Diet., *Ph. heterosporum* Diet., *Ph. Nambuanum* Diet., *Ph. Yoshinagai* Diet., *Ph. Rubi-Thunbergii* Kusano, 及び *Ph. carbonarium* (Schlecht.) Wint. なりとす。然れ共余が今回の研究に依れば以上列記せるものの内 *Ph. Fragariastri* (DC.) Schroet., 及び *Ph. subcorticium* (Schrank.) Wint. の二種は全く本邦に於て産せざるものたり。

抑々 *Ph. Fragariastri* の本邦所産菌類として認めらるゝに至りしは一千九百〇二年 **P. Hennings** 氏が Engler's botanisches Jahrbücher 誌上に公にせる Fungi Japonici IV. 中に本種を記せるに始まる。然るに今余は嘗つて同氏が其論文を草するに當つて親しく検索せられたる該標品を検鏡するに之れ全く *Pucciniastrum Potentillae* Kom. の寄生せるものに過ぎざりき。尚此點に關して **Dietel** 氏は嘗つて同誌上に於て **P. Hennings** 氏の誤謬たるを指摘せるものあり。之れを要するに本邦に於ける *Potentilla* 屬の植物に寄生する *Phragmidium* は只 *Ph. Potentillae* (Pers.) の一種あるのみ。

次に *Ph. subcorticium* は草野氏が武藏國高尾に於て採集せられたるのいばらの葉上に寄生せる *Phragmidium* の標品に基きて一千九百〇一年 **Dietel** 氏が本種と同一種なりとし Engl. bot. Jahrb. 誌上に發表せるを嚆矢とし爾來本邦菌學家はのいばらの外はまなすに寄生せるものをも該名稱の下に置きたるものなり。今 **Dietel** 氏の所謂 *Ph. subcorticium* を草野氏の採集に係る原標品によりて検するに一千九百〇五年 **Dietel** 氏が新種として記載せる *Ph. Rosae-multiflorae* と符節を合するが如く秋毫の差違を認めず。而して同著者は該新種を記載す

るに當つて何等此處に論及せざるのみならず其採集地及び採集月日をも記入せず只草野氏の採集品たるを示すに止まる。之に依つて或は同一標品を用ゐて記載せるものにあらざるやを疑ふものなり。次にはまなすに寄生せる *Phragmidium* は精細に觀察する時は種々の點に於て相違し到底之れと同一種なりと認むること能はず。而して尙其葉上に寄生するものと梢上に寄生するものとは其形態大に異るを以て余は前者を *Ph. Rosæ-rugosæ*, 後者を *Ph. yezoense* と命名せり。

以上述ぶる理由に依りて此等二種を本邦菌界より除去すれば已知本邦産 *Phragmidium* の種類は只十を數ふるのみ。而して今回余の考察によりて尙此れに七種を添加することを得たり。内三種は新種と認識し新に之れを記載せり。今其添加七種の名稱を記すれば *Ph. americanum* (Pk.) Diet., *Ph. fusiforme* Schroet., *Ph. Rubi* (Pers.) Wint., *Ph. Rubi-Idaei* (Pers.) Wint., *Ph. Rosae-rugosæ* n. sp., *Ph. yezoense* n. sp. 及び *Ph. Rubi-japonici* n. sp. なりとす。

前記の種類を通算せば其數は實に十七種となる。内本邦特種と認むべき種類は *Ph. japonicum* Diet., *Ph. Rosæ-multiforæ* Diet., *Ph. Barnardi* Plowr. et Wint. var. *pauciloculare* Diet., *Ph. griseum* Diet., *Ph. heterosporum* Diet., *Ph. Nambuanum* Diet., *Ph. Yoshinagai* Diet., *Ph. Rubi-Thunbergii* Kusano, *Ph. Rosæ-rugosæ* n. sp., *Ph. yezoense* n. sp. 及び *Ph. Rubi-japonici* n. sp. の十一種とす。

終りに臨んで本邦に於ける此等菌類の寄主植物を記すれば次の如し。

1. **Potentilla** L.

Phragmidium Potentillæ (Pers.) Karst.

Potentilla chinensis Ser. カハラサイゴ

„ *Cryptotaeniæ* Maxim. ミツモト

„ *Dickinsii* Fr. et Sav. イハキンバイ

„ *gelida* C. A. Mey. ミヤマキンバイ

Potentilla Kleiniana W. et A. ヲヘビイチゴ

2. **Rosa** Tourn.

Phragmidium americanum (Pk.) Diet.

Rosa dahurica Pall. カラフトバラ

Ph. fusiforme Schrœt.

Rosa acicularis Lindl. タカネバラ

Ph. japonicum Diet.

Rosa Luciæ Fr. et Roch. ハヒイバラ

„ *multiflora* Thunb. ノイバラ

„ *Wichuriana* Crep. テリハノイバラ

Ph. Rosae-multiflorœ Diet.

Rosa laevigata Mich. ナニハイバラ

„ *multiflora* Thunb. ノイバラ

Ph. Rosae-rugosœ n. sp.

Rosa rugosa Thunb. ハマナス

Ph. yezoense n. sp.

Rosa rugosa Thunb. ハマナス

3. **Rubus.** L.

Phragmidium Barnardi Plowr. et Wint. var. *pauciloculare* Diet.

Rubus parvifolius L. ナハシロイチゴ

„ *phoenicolasius* Maxim. ウラジロイチゴ

„ *rosaefolius* Sm. var. *minor* Hack. バライチゴ

Ph. griseum Diet.

Rubus incisus Thunb. ニガイチゴ

Ph. heterosporum Diet.

Rubus trifidus Thunb. カヂイチゴ

Ph. Nambuanum Diet.

Rubus occidentalis L. var *japonicus* Miyabe. クロイチゴ

Ph. Rubi (Pers.) Wint.

Rubus arcticus L. チシマイチゴ

Ph. Rubi-Idœi (Pers.) Wint.

Rubus Idœus L. var. *strigosus* Maxim. エゾイチゴ

Ph. Rubi-japonici n. sp.

Rubus japonicus Maxim. ゴエフイチゴ

Ph. Rubi-Thunbergii Diet.

Rubus Thunbergii S. et Z. クサイチゴ

Ph. Yoshinagai Diet.

Rubus crataegifolius Bge. タチイチゴ

Rubus morifolius Sieb. クマイチゴ

4. **Sanguisorba** L.

Phragmidium carbonarium (Schlecht.) Wint.

Sanguisorba canadensis L. var. *media* Maxim

ウスベニワレモカウ

〃 *officinalis* L. ワレモカウ

〃 *tenuifolia* Fisch. var. *alba* Trautv. et Mey.

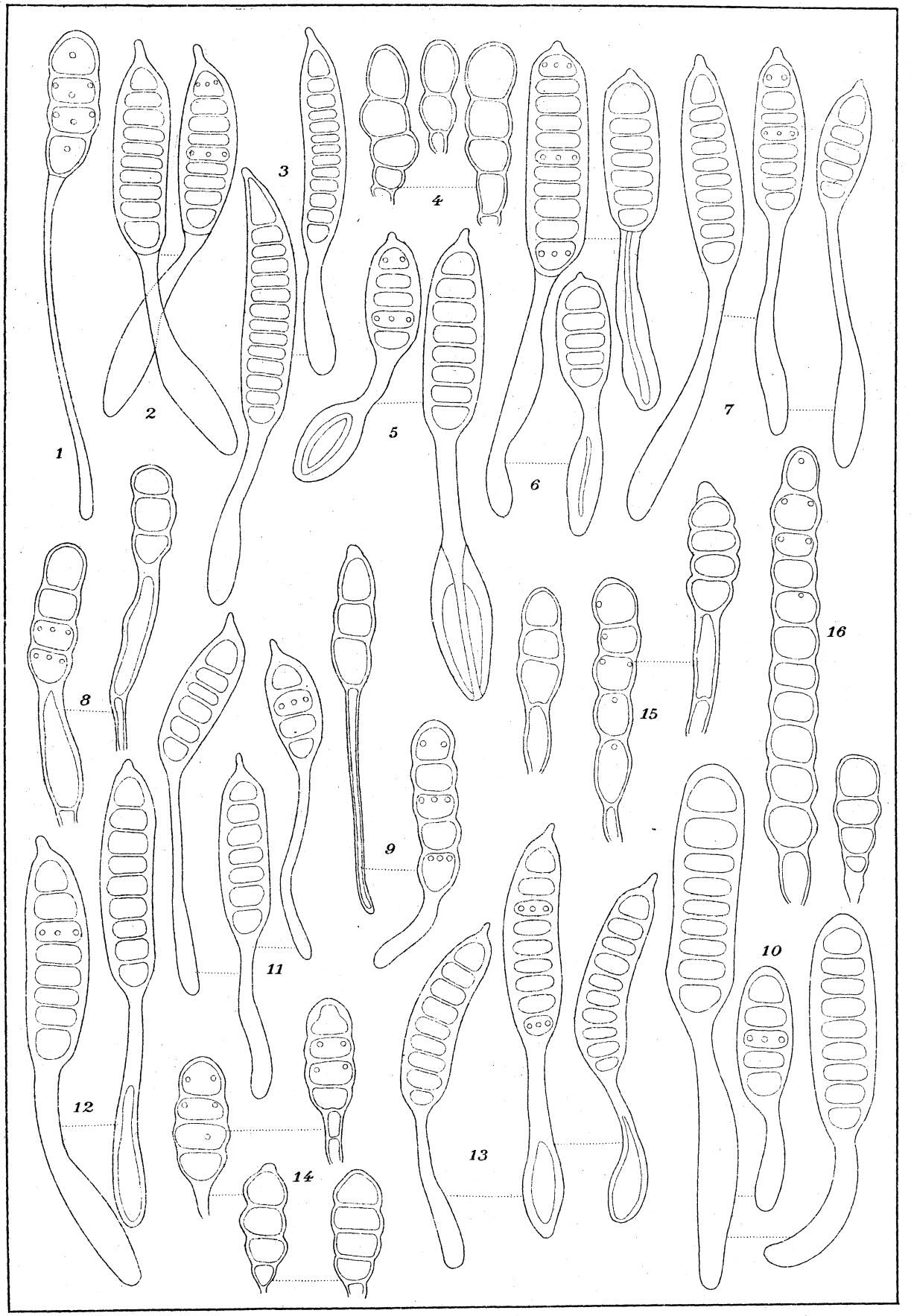
シロワレモカウ

終りに臨んで本研究をなすに當つて恩師宮部博士の常に懇篤なる指導を與へられ且つ當農科大學植物學教室所藏の本屬菌の標本を檢閲することを快認せられたることを深謝すると共に余の需によりて貴重なる標品を惠與せられたる白井教授、草野助教授、三宅學士並に吉永氏に向つて謹んで其好意を謝し併せて種々の點に就き助言と助力とを與へられたる高橋、伊藤兩學士に對して感謝の意を表す。 (明治四十二年十一月稿)

附記、日本菌類志料とは東北帝國大學農科大學教授理學博士宮部金吾氏の研究並に氏の指導によりてなれる本邦產菌類の研究結果を輯むるものにして已に發表せられたるもの次の如し。

1. T. MIYAKE, On Puccinia Parasitic on the Umbelliferæ of Japan. Journ. of the Sapporo Agric. Coll. Vol. II. Pt. 3. 1906.

2. S. ITO, On the Uredineæ Parasitic on the Japanese Gramineæ. Journ. of the Coll. of Agric. Tohoku Imp. Univ. Sapporo. Vol. III. Pt. 2. 1909.



M. Kasai del.